

MATERIAL SAFETY DATA SHEET

1. SUBSTANCE AND SOURCE IDENTIFICATION

National Institute of Standards and Technology
Standard Reference Materials Program
100 Bureau Drive, Stop 2320
Gaithersburg, Maryland 20899-2320

SRM Number: 2770
MSDS Number: 2770
SRM Name: Sulfur in Diesel Fuel Oil

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Description: This Standard Reference Material (SRM) is intended for use in the evaluation of methods and the calibration of instruments used in the determination of total sulfur in fuel oils or materials of a similar matrix. SRM 2770 consists of 10 amber ampoules, each containing approximately 10 mL of diesel fuel sealed under an argon atmosphere.

Substance: Diesel Fuel Oil No. 2.

Other Designations: Diesel Fuel Oil No. 2 (diesel oil; diesel fuel; diesel oil no. 2-d; regular diesel; fuel oil #2)

2. COMPOSITION AND INFORMATION ON HAZARDOUS INGREDIENTS

| Component | CAS Registry | EC Number (EINECS) | Concentration (%) |
|-----------------------|--------------|--------------------|-------------------|
| Diesel Fuel Oil No. 2 | 68476-34-6 | 270-676-1 | 100 |

Index, R/S Phrases (EC): Xn; R40, S2, S36/37
See "Section 15".

3. HAZARDS IDENTIFICATION

NFPA Ratings (Scale 0–4): Health = 2 Fire = 2 Reactivity = 0

Major Health Hazards: Respiratory track irritation, skin irritation, central nervous system depression.

Physical Hazards: Combustible liquid and vapor. Flash back hazard.

Potential Health Effects (short term exposure)

Inhalation: Irritation to the mucous membranes and respiratory tract, nausea, headache, drowsiness, dizziness, loss of coordination, disorientation, bluish skin color, unconsciousness.

Skin Contact: Irritation, blisters and skin disorders.

Eye Contact: Irritation.

Ingestion: Aspiration hazard, gastrointestinal irritation, nausea, vomiting, diarrhea, difficulty breathing, symptoms of drunkenness, lung congestion.

Listed as a Carcinogen/Potential Carcinogen

| | Yes | No |
|--|---------------|----------|
| In the National Toxicology Program (NTP) Report on Carcinogens | <u> </u> | <u>X</u> |
| In the International Agency for Research on Cancer (IARC) Monographs | <u> </u> | <u>X</u> |
| By the Occupational Safety and Health Administration (OSHA) | <u> </u> | <u>X</u> |

4. FIRST AID MEASURES

Inhalation: If adverse effects occur, remove to uncontaminated area. If not breathing, give artificial respiration by qualified personnel. Get immediate medical attention.

Skin Contact: Wash affected skin with soap and water for at least 15 minutes while removing contaminated clothing. Get medical attention, if needed.

Eye Contact: Immediately flush eyes, including under the eyelids, with copious amounts of water for at least 15 minutes. Get immediate medical attention.

Ingestion: Aspiration hazard. **DO NOT** induce vomiting. If vomiting occurs, keep head lower than hips to prevent aspiration. If not breathing, give artificial respiration by qualified personnel. Contact local poison control center or physician immediately. Get immediate medical attention.

5. FIRE FIGHTING MEASURES

Fire and Explosion Hazards: Moderate fire hazard. Vapor/air mixtures are explosive above flash point.

Extinguishing Media: Regular dry chemical, carbon dioxide water and regular foam. Vapors or gases may ignite at distant ignition sources and flash back.

Fire Fighting: Move container from fire area if it can be done without risk. Avoid inhalation of material or combustion by-products. Wear full protective clothing and NIOSH-approved self-contained breathing apparatus (SCBA).

Flash Point (°C): 93

Autoignition (°C): > 246

Method: ASTM D93(A)–
04

Flammability Limits in Air (Volume %): Upper: > 6

Lower: 0.6

Flammability Class (OSHA): II.

6. ACCIDENTAL RELEASE MEASURES

Occupational Release: Avoid heat, flames, sparks and other sources of ignition. Absorb with sand or other non-combustible agents. Collect spilled material in appropriate container for proper disposal. Subject to California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65). Keep out of water supplies and sewers. Refer to Section 13 “Disposal Considerations”.

7. HANDLING AND STORAGE

Storage: Store and handle in accordance with all current regulations and standards. Keep separated from incompatible substances. Subject to storage regulation: U.S. OSHA 29 CFR 1910.106.

Safe Handling Precautions: Wear splash resistant safety goggles. Wear chemical resistant clothing and gloves. An eye wash station and washing facilities should be readily available near handling and use areas. See Section 8 “Exposure Controls and Personal Protection”.

8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

Diesel Fuel Oil No. 2

ACGIH TWA (skin): 100 mg/m³ (vapor and aerosol)

OSHA TWA: 5 mg/m³ (mist)

ACGIH TWA: 5 mg/m³ (mist)

NIOSH TWA: 5 mg/m³/10 hour (mist)

UK OES TWA: 5 mg/m³ (mist)

Ventilation: Provide local exhaust ventilation system.

Respirator: If necessary, refer to the “NIOSH Guide to the Selection and Use of Particulate Respirators Certified under 42 CFR 84” for selection and use of respirators with organic vapor cartridges certified by NIOSH.

Eye Protection: Wear safety goggles. DO NOT wear contact lenses in the laboratory. An eye wash station should be readily available near of handling and use areas.

Personal Protection: Wear protective clothing and chemically resistant gloves to prevent skin exposure.

9. PHYSICAL AND CHEMICAL PROPERTIES

| Diesel Fuel Oil No. 2 |
|---|
| Appearance and Odor: colorless to brown liquid, petroleum odor |
| Boiling Point (°C): 171 to 360 |
| Freezing Point (°C): -18 |
| Density (g/cm³): 0.8 |
| Solubility in Water: insoluble |
| Solvent Solubility: soluble in petroleum solvents |

10. STABILITY AND REACTIVITY

Stability: ☒ Stable ☐ Unstable

Stable at normal temperatures and pressure.

Conditions to Avoid: Avoid heat, flames, sparks and other sources of ignition. Ampoules may rupture or explode if exposed to heat.

Incompatible Materials: Oxidizing materials.

Fire/Explosion Information: See Section 5 “Fire Fighting Measures”.

Hazardous Decomposition: Thermal decomposition or combustion produces oxides of carbon and sulfur.

Hazardous Polymerization: ☐ Will Occur ☒ Will Not Occur

11. TOXICOLOGICAL INFORMATION

Route of Entry: ☒ Inhalation ☒ Skin ☒ Ingestion

Diesel Fuel Oil No. 2

LD₅₀ (skin-rabbit): 5 mL/kg

LD₅₀ (oral-rat): 7.5 g/kg

Health Effects (Acute Exposure)

High concentrations of diesel fuel mist or vapor may cause respiratory tract irritation. High levels may also cause central nervous system excitation followed by depression with symptoms possibly including restlessness, confusion, ataxia, headache, dizziness, anorexia, nausea, vomiting, weakness, incoordination, stupor, delirium and coma. Ingestion may cause nausea, vomiting, cramping, diarrhea, and possibly symptoms of central nervous system depression. Aspiration of even small amounts during ingestion or vomiting may result in severe pulmonary irritation with coughing, gagging, dyspnea, substernal distress, and pneumonitis, pulmonary edema and hemorrhage, and death. The probable lethal dose in humans is 0.5 to 5 g/kg for a 68 kg (150 lb) person. Death is due to pneumonitis or respiratory failure.

Medical Conditions Generally Aggravated by Exposure: Respiratory disorders.

12. ECOLOGICAL INFORMATION

Environmental Summary: Not available.

13. DISPOSAL CONSIDERATIONS

Waste Disposal: Dispose in accordance with all applicable federal, state, and local regulations. Subject to disposal regulations: U.S. EPA 40 CFR 262, Hazardous Waste No. D001. Keep out of sewers and water supplies.

14. TRANSPORTATION INFORMATION

U.S. DOT and IATA: Not applicable.

Canadian Transportation WHMIS: Not applicable.

15. REGULATORY INFORMATION

U.S. REGULATIONS

CERCLA Sections 102a/103 (40 CFR 302.4): Not applicable.

SARA Title III Section 302 (40 CFR 355.30): Not applicable.

SARA Title III Section 304 (40 CFR 355.40): Not applicable.

SARA Title III Section 313 (40 CFR 372.65): Not applicable.

OSHA Process Safety (29 CFR 1910.119): Not applicable.

SARA Title III Sections 311/312 Hazardous Categories (40 CFR 370.21)

ACUTE: Yes

CHRONIC: Yes

FIRE: Yes

REACTIVE: No

SUDDEN RELEASE: No

STATE REGULATIONS

California Proposition 65: Not regulated.

CANADIAN REGULATIONS

WHMIS Classification: Not determined.

EUROPEAN REGULATIONS

EC Classification: Carcinogen Category 3

Danger/hazard Symbol

Xn Harmful.

EC Risk and Safety Phrases

R40 Limited evidence of a carcinogenic effect.

S2 Keep out of reach of children.

S36/37 Wear suitable clothing and gloves.

NATIONAL INVENTORY STATUS

U.S. Inventory (TSCA): Listed on inventory.

TSCA 12(b), Export Notification: Not listed.

16. OTHER INFORMATION

Sources: MDL Information Systems, Inc., MSDS *Fuel Oil No. 2*, 18 September 2003.

Disclaimer: Physical and chemical data contained in this MSDS are provided only for use as a guide in assessing the hazardous nature of the material. The MSDS was prepared carefully, using current references; however, NIST does not certify the data in the MSDS. The certified values for this material are given in the NIST Certificate of Analysis.